

DEVICE FOR ASSESSING PERFUSION FAILURE IN A PATIENT  
BY MEASUREMENT OF BLOOD FLOW

**ABSTRACT**

A device is provided for assessing impairment of blood circulation in a patient, such as that in perfusion failure, by measurement of blood flow adjacent a mucosal surface accessible by a mouth or nose and connecting with the gastrointestinal tract or upper respiratory/digestive tract of a patient. The device includes a blood-flow sensor adapted to be positioned adjacent a mucosal surface with a patient's body and measuring blood flow in adjacent tissue and a  $\text{PCO}_2$  sensor adapted to be positioned adjacent the mucosal surface and measuring  $\text{PCO}_2$ . In addition a pH sensor may be used in combination with the blood flow determination. A method of detecting perfusion failure is also disclosed. The method includes utilizing blood-flow measurements in conjunction with a surface perfusion pressure index and/or an optical plethysmography index to more accurately assess perfusion failure. These measurements may also be supplement by taking measurements of pH, sublingual  $\text{PCO}_2$ , and  $\text{Sa O}_2$ . The invention affords rapid measurement and detection of perfusion failure.